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ABSTRACT

Improving spelling performance of college students is a question of insuring that the correct information is in long-term memory and readily retrievable. Any system of spelling instruction should recognize the capacity limits of the sensory register and short-term memory; provide for identification of and concentration on the distinctive features of words to be learned, and specifically on areas of special interest to the speller; provide for adequate rehearsal; emphasize imagery, concreteness, and meaning; include an instructional set to "image"; and provide for adequate cues for efficient retrieval. This can be accomplished through the use of workbooks combined with slides and tapes to form a training and rehearsal system or a simpler program called "The Word Bank System" which uses a series of short dictations designed to help students identify words they misspell and the error areas within those words. A management system insures that the students go through the number of iterations required to produce mastery, and tapes permit integration of self-instructional spelling texts into the system. The instructional design should include a workable management system which will provide efficient operational control and measurement of criterion performance. (HOD)

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TECHNIQUES FOR IMPROVING SPELLING PERFORMANCE

Paper presented at the Annual Meeting of the Conference on College Composition and Communication (31st, Washington, D.C., March 13-15, 1980)

Session A22: Helping the Basic Writer

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TECHNIQUES FOR IMPROVING SPELLING PERFORMANCE

Poor spelling on the part of college students is a lot like the weather. It has been around as long as anyone can remember, but no one has been able to do anything about it. One reason may be the assumption that college students who are poor spellers need to learn how to spell. As a result, most of the methods and materials applied at the college level have relied heavily on the principles used to teach children how to spell at the elementary level. This approach ignores the considerable differences between college and elementary students, e.g., differences in maturity, learning experiences, learning environments, motivation, vocabulary and, most of all, in the learning task. The major difference in the latter lies in the fact that while elementary students need to learn how to spell—that is, how to form words--college students already know how to spell, as demonstrated by evidence that even the worst spellers correctly spell at least 75% of the words in their compositions. Another reason may be that most of the research has focused primarily on the results of the spelling process, rather than on the process itself. That is, attention has been focused on the words, rather than on the speller. This is understandable. Words and errors are visible, quantifiable, and kind of fun to fool around with. As a result, we have known for decades which words will be misspelled and where the misspellings will occur. What we quite evidently haven't known is how to teach some students how to avoid producing those misspellings. This state of affairs may be because preoccupation with the words has led to erroneous conjectures

about the utility of applying rules, "sounding out," syllabication, and admonitions to use correct pronunciation and the dictionary. There are several reasons why these techniques haven't worked very well. For one thing, most of the rules are infernally complex and riddled with exceptions. For another, only about 50% of commonly used words can be accurately spelled by sound, even if there were consensus on correct pronunciation and no variables such as regional accents. How is it then, that a large number of students have no problems with spelling? The answer may be found when we shift our focus from the study of the product to a study of the process, that is, what goes on inside the head of the writer to produce a flow of correctly spelled words in written communication.

Recent models of this process suggest that although a number of different routes may be used by the writer to produce correctly spelled words, e.g., writing the word and then checking it mentally or against another source, or checking the source before writing it, the most efficient type of performance is direct production of correctly spelled words without conscious effort. This suggests, to some extent, a conditioned response. It might be noted that under this concept, the learning task might be almost astronomical as far as the number of responses is concerned, if it weren't for evidence that, for most practical purposes, the number of responses required is rather limited. In this instance, the quantity of research focused on words and errors has produced some useful information. The research indicates that although vocabulary ranges may go as high as 10,000 words or more, a smaller core of about 3,000 to 4,000 words includes 98% of the words used in written or printed communications. Furthermore, the majority of misspellings occur within an even smaller group of words, probably no more than 500. Finally, almost all of these words—about 96%—

have only one or two hard spots as far as spelling is concerned. Therefore, the solution to problems in spelling performance appears to involve a limited number of error areas within a limited number of words.

In addition to general agreement on the most desirable and efficient type of spelling performance, models of the spelling process all include the memory system as a major and pivotal element. Therefore, consideration of the makeup and operation of the memory system seems essential in searching for a solution to the spelling problem. Most contemporary researchers in the field of memory processes assume that the memory system is comprised of three sub-systems--a sensory register, or iconic store, a short-term memory, and a long-term memory. Information is initially registered in terms of physical characteristics in the sensory register. The capacity of the sensory register appears to be approximately nine symbols. If the information is to be retained for more than a very brief instant, it must be transferred to the other memory systems. Information selected for retention is transferred into the short-term memory, which is what might be termed a working memory. Two characteristics of the short-term memory are important. The capacity appears to be limited to seven units, plus or minus two. The second characteristic is that information in short-term memory is lost very rapidly, often within fifteen seconds, unless rehearsal takes place. Furthermore, rehearsal is required if the information is to be transferred from the short-term to the long-term memory. The concept of rehearsal includes not only repetition, but also the formation of mnemonics or visual imagery, or a combination of the two. Storage in long-term memory is considered to be permanent, resistant to forgetting, and apparently of unlimited capacity. For the time being, most psychologists seem to agree that storage is indeed permanent, and that forgetting

is not a loss of the information but merely a failure to be able to retrieve it. Whatever the case may be, it seems clear that producing written words as a part of a flow of thought is a case of rapid retrieval of correct symbols from long-term memory, assuming, of course, that the correct symbol or image is in the long-term memory. Research in memory processes has also disclosed some interesting information about factors which facilitate learning, retention and recall. Most of the research agrees that visual imagery is essential in memory and recall, and that among the factors which facilitate learning, retention and recall are vividness, concreteness and meaning. Furthermore, the process appears to be facilitated by instructions to the learner to "image," and particularly instructions which emphasize active and vivid imaging. Finally, efficient retrieval from long-term memory seems to be facilitated by a system of cues, both visual and verbal.

To sum up, then, it would seem that improving spelling performance of college students is a question of insuring that the correct information is in long-term memory and readily retrievable. Since imagery, concreteness and meaning facilitate learning, retention and recall, it is also logical to suppose that a system of spelling instruction which includes these elements would improve spelling performance. It is postulated, then, that any system of spelling instruction ought to include certain basic elements. It should:

a. recognize the capacity limits of the sensory register and short-term memory;

b. provide for the identification of and concentration on the distinctive features of words to be learned, and specifically on areas of special interest to the speller;

c. provide for adequate rehearsal;

d. emphasize imagery, concreteness, and meaning;

e. include an instructional set to "image"; and

f. provide for adequate cues for efficient retrieval.

The rationale outlined thus far seems logical enough. However, the big question about any proposed theory is: does it work? In this particular instance, some support for the rationale was produced by a research project designed to test the application of the theory to a relatively real-life situation. Approximately 200 community college students enrolled in a developmental English basic composition course were tested for imagery ability, divided into high and low imagery ability groups, and randomly assigned within these groups to three spelling instructional treatments. These treatments were designed to provide a high, moderate or zero level of visual imagery in the instruction. The treatments consisted of a two-week sequential program in the format of pre-test/study/post-test on ten words each day for a total of 100 words. In the first week, the students studied the words via self-instruction booklets which used experimenter-provided imagery. In the second week, the booklets contained instructions designed to facilitate student self-generated imagery. Post-tests measured immediate spelling performance, and also short-term and long-term retention at four and eight-week intervals. After the last post-test, post-instruction imagery ability was measured by an alternate form of the pre-instruction test. The results showed that all treatment groups did better than a non-treatment group which fortuitously developed during the research. The results also suggested that experimenter-provided high-concrete imagery can be used to improve spelling performance; that underlining, formerly considered as of no value, might warrant reconsideration as a

means for improving performance; and that imagery ability may be improved by training, but the latter may be more likely for those who enter the training with a low level of ability. The results appear to support previous evidence of the importance of visual imagery in tasks involving learning, retention, and recall, such as spelling, although, as is always the case, further research is needed.

Other applications of the rationale have also produced encouraging results. Workbooks used in the research project have been combined with slides and tapes to form a training and rehearsal system called VISP (Visual Imagery Spelling Program), which has been used with some, though rather limited, success with students who might be termed "spelling cripples." A much simpler program, called "The Word Bank System," has been developed and has been in use for several years on a wider scale and with a higher degree of success. General experience has been that about 80% of the students achieve criterion performance by the end of one quarter of instruction. This system uses a series of short dictations designed to help students identify words they misspell and the error areas within those words. The words are recorded on a word-bank list, and placed on cards, together with a sentence using the word. The same information goes on the back of the card, except that blanks are created in the areas to be emphasized, which requires the student to create mental images in those areas. The students also put the words and sentences on tapes in order to provide an additional means for rehearsal and self-testing. A management system insures that the students go through the number of iterations required to produce mastery, i.e., entry into and accurate retrieval from long-term memory. Tapes have also been developed which permit integration of self-instructional spelling texts into the system. The system has been adapted for use by both native and non-native speakers, and also for use by handicapped students, e.g.,

blind or with physical handicaps that prevent instructional delivery or measurement of results in a normal fashion.

These methods and materials are still considered to be in the formative stages, and certainly cannot be claimed to represent a definitive solution to the problem. It is believed, however, that results have been sufficient to support some recommendations for consideration by those wanting to design or try methods and materials based on the process-oriented model described earlier. First, it is recommended that the instruction concentrate on words that are probably within the student's useful working vocabulary, and that the student has misspelled or is likely to misspell. Second, the instruction should provide a means for the student to identify misspelled words, the specific error areas within those words, and the distinctive features of the correct letter formations within those areas. This insures that the number of items on which attention is to be focused does not exceed the limits assumed to be in the transfer elements of the memory processing system. Third, the instruction should encourage the development of vivid, active imagery to facilitate entry of correct word forms into long-term memory and their efficient retrieval without conscious effort. Steps to facilitate entry, retention and recall should include:

a. directions designed to establish an instructional set to image
b. the use of visual mnemonics in the form of vivid, interactive, highly-concrete imagery
c. the use of verbal cues to assure the inclusion of meaning in the mnemonic system
d. provision for sufficient active rehearsal to insure transfer into long-term memory.

Finally, the instructional design should include a workable management system which will provide efficient operational control and adequate measurement of progress toward, and achievement of, criterion performance.

Having described what appears to be an unconventional way to get to heaven, it seems prudent to return to the conventional and conclude with the evangelist's usual caveats, i.e., there are undoubtedly other ways to get there, and this one may not even be the best way, but at least it holds some promise and may be worth trying. It might even be fun.

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